Studies of the Monroe Collection of Asters

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One of the outstanding collections in the Department of Botany of the Public Museum at Milwaukee is that of the genus Aster of the late Charles E. Monroe,[1] a distinguished attorney of that city.

For many years Mr. Monroe was particularly interested in this genus using all the time possible from his profession to make a wide collection and study of it, both in the field and in herbaria. His collections cover an extended territory of eastern Wisconsin, besides gifts and exchanges from other collectors; among them Dr. H. V. Ogden, Dr. A. B. Stout, and the Messrs. Sam. C. Wadmond, Howland Russel, Wm. Finger, Wm. V. Wright, and the writer. In addition, he made a number of collecting and study trips into Illinois and eastward into Ohio, Connecticut and Massachusetts.

In September, 1913, a pamphlet was published by Mr. Monroe as a Bulletin of the Wisconsin Natural History Society, devoted mostly to his findings in Wisconsin asters, but also treating the work done by former workers on the genus in the state from the earliest records, 1838, to the date of his publication.

Mr. Monroe's herbarium specimens are models of neatness and precision—numbered and arranged by species and their variations in leaf-form, coloration, pubescence and other characters. This arrangement, together with its extensiveness, care-

[1] Through the courtesy of Albert M. Fuller, Curator of Botany at Milwaukee Public Museum, and H. W. Cargill of Oberlin College, a few lines of biography can be given:

Charles E. Monroe was born March 28, 1857, at Oberlin, Ohio and died there May 12, 1931, at the age of 74. He was a graduate of Oberlin College and of the Law School of the University of Michigan. In 1924, he was married to Marie Jussen, a niece of Carl Schurz—soldier, statesman, journalist.

Mr. Monroe collected most of the asters himself, but his sister, M. K. Monroe, who passed away in 1917, did some collecting, particularly of violets, and his wife collected quite a number of the asters of the eastern states.

"In the museum herbarium we have 5,341 catalog numbers, consisting of 17,975 sheets. The bulk of his collection which he gave to us in 1924 we have kept intact as a collection. We must have at least 5,000 miscellaneous numbers which he gave to us before 1924, which are in our general herbarium."—Fuller.

ful and conservative determinations and copious notes gives to the collection its special value, hence the Department of Botany of the Milwaukee Museum is keeping it together. Workers may thus note how a species will, in cases, gradually approach extreme characters that quite blend into an extreme of a related species.

Mr. Monroe's collection of the Biotian asters is thoroughly representative, and the macrophyllus group is arranged in a series from delicate, thin-leaved, narrow-bracted specimens to those of heavy, vigorous form with large bracts, spreading in some cases, and long rays. Since Prof. Edw. S. Burgess' exhaustive studies in this group were available to Mr. Monroe, no further findings will here be attempted except as regards the species *A. furcatus*,

His assemblage of *A. furcatus* and *A. leptocaulis* appear to merge into each other. Many of them are without any sign of leaf laciniations, as his nos. 107 and 109 with "small heads" (12 mm. wide, well pressed) and nos. 106 and 108 with much wider heads (15–18 mm.), all of the same height, however, 10 mm., and about the same in number, though the lower cauline leaves on the latter plants have conspicuously longer petioles. They are all from Tweedy's Woods, Milwaukee County,[2] Aug. 28, 1910. These four numbers are revised to *A. furcatus* Burgess, *f. elaciniatus* Benke.[3] Mr. Monroe wished to ascertain the northern limit of this species, it not being well defined at the time, and by exchange material from me the forma was found as far north as Sheboygan County, Sept. 5, 1913, *Benke* mus. no. 28650.[4] Other specimens are from further north, but these have the typical leaf-base laciniations,[5] hence not the forma: *Aster furcatus*, Manitowoc, Aug. 31, 1913, *Benke* mus. nos. 28766 and 28770; also, Sept. 9, 1914, *Benke* mus. no 30123. Mr. Monroe reported having seen a specimen in the Field Museum Herbarium from yet further north. I have found it to be WISCON-

[2] When no state is given in this paper, Wisconsin is understood, and when no collectors name, Chas. E. Monroe.

[3] Benke, Am. Mid. Naturalist. XIII: 326 (1932).

[4] Numbers of the specimens are listed as those of Mr. Monroe; if unnumbered by him, those of the museum are given.

[5] Burgess, Mem. Torr. Bot. Club, XIII: 246 (1923) " . . . with broad laciniate-leaf bases."

SIN: Kewaunee County, July 30, 1892, *J. H. Schuette* Field Mus. no. 377243.[6]

In looking over herbarium specimens, it is noted that rays of this pure white species have a tendency to turn bluish. We see the importance of recording colors promptly in the field, which Mr. Monroe made a special point of doing.

Mr. Monroe uncovered a new color, very rare in this species. It is represented by his nos. 97–100, and by another series, nos. 118–122, all collected in Tweedy's Woods near Milwaukee, Aug. 2, 1914, the specimens stand out startlingly distinct even yet, some twenty years later, showing surprising fixedness in their rose-red tintings. Full justification is felt in separating this color form:

Aster furcatus Burgess, f. **erythractis,** f. nov., a specie radiis 11–19 roseo-rubris vel paullo purpurascentibus facile distinguitur.—WISCONSIN: Tweedy's Woods, Milwaukee County, Aug. 2, 1914. *Chas. E. Monroe* 97 (TYPE, Milwaukee Public Museum).

Rays 11–19, rose-red, to slight admixture of violet. All specimens examined, the nine numbers above listed, showed more or less leaf-base laciniations.

In his collections of *A. Shortii* are represented probably all its variations and forms besides the typical plants with blue rays and elongated ovate-lanceolate leaves. In several instances he has found the rare form with rose-red rays, or as he is wont to refer to this tinting, "pink"—*A. Shortii* Hook., f. *Gronemanni* Benke. Among these are: Story's Woods, Wauwatosa, Milwaukee County, Sept. 8, 1905, no. 1574; Waukesha, Waukesha County, Sept. 8, 1905, no. 1576; and OHIO: Elyria, Lorain County, Sept. 19, 1913, no. 1595.[7]

One variety of this species stands out boldly from the rest in his assemblage. It is of lusty growth and the middle and lower leaves are only about twice longer than broad—measurements of some: 4.5×7 cm., 6×9.5 cm., 4.5×8.5 cm. differing from the

[6] The revision of the name from *Aster corymbosus* Ait. bears the initials of Mr. Monroe over the label.

[7] A specimen of this form he donated to me—later by me to Field Museum herbarium—may be seen there. It is WISCONSIN: Story's Woods, Milwaukee County, Sept. 8, 1895, *Monroe* 936.

usual leaf-form, 3 to 4 times as long as broad. It is considered worthy of varietal rank, so I would segregate it as:

Aster Shortii Hook., var. **Monroei,** var nov., planta robusta; folia caulina media et inferiora duplo longiora quam lata interdum ovata vel fere rotundata; capitala vulgo paullo majora et bracteae latiores quam in forma typica.—WISCONSIN: Berryville, Kenosha County, Oct. 4, 1903. *Chas. E. Monroe* 1576 (TYPE, Milwaukee Public Museum).

Plants robust; middle and lower cauline leaves about half as wide as long, sometimes cordate-ovate or almost round; heads usually somewhat larger and bracts wider; otherwise with the species.

It is with genuine pleasure that I name this handsome variety for my friend and co-worker with the genus *Aster*, Charles E. Monroe.

This variety is rare in its Wisconsin-Illinois range, but appears to be common eastward, as specimens collected by Mr. Monroe in Ohio key to it. Two examples can here be cited, OHIO; Elyria, Lorain County, Oct. 1, 1909, no. 1577 (middle leaves about 5.5×9 cm.) and Lorain, Lorain County, Sept. 20, 1909, no. 1578, similar. A specimen,—WISCONSIN: Caledonia, Racine County, Sept, 14, 1902, no. 1590, has almost round leaves, and this specimen is not alone in this tendency in the assemblage.

Further, Mr. Monroe revealed yet another form having pure white rays, which has never been seen by me, either in the field or on record in *hortus siccus*. It is evidently very rare and here proposed as:

Aster Shortii Hook., f. **candidus,** f. nov., ligulae albae; forma rarissima—WISCONSIN: Johnson's Woods, Wauwatosa, Milwaukee County, Sept. 23, 1905. *Chas. E. Monroe* 1594 (TYPE, Milwaukee Public Museum).

With the species; rays pure white; form very rare.

No case of *A. patens* Ait. has been uncovered, although collectors have diligently searched for it, nor does it escape when cultivated. It has at times been erroneously listed from Wisconsin.

A. novae-angliae L., f. *genesseensis* House, quite rare, was taken by Mr. Monroe on one of his trips east, viz. OHIO: Oberlin, Lorain County, Sept. 28, 1909, no. 3110. Likewise, he has

some narrow-leaved specimens of *A. laevis* with leaves which grade in a series to the extreme measurement of 1×15 cm. He records these as *A. concinnus* Willd.; like Gray he suggests ambiguity of this species—even hybridism in cases. Specimens of these are WISCONSIN: Whitefish Bay, Milwaukee County, Aug. 17, 1903, no. 3082, and Lake Woods Ravine, Milwaukee County, Sept. 10, 1904, no. 3083.

Another series graduating in an interesting scale is that of *Aster pilosus* Willd., var *Pringlei* (Gray) Blake.[8] Some were collected in central Wisconsin, about Kilbourn, Sauk County where soils are light and sandy, and others are from North Bay in Door County, another region of light soil—an ecological factor which must not be disregarded in determining the taxonomic position of these plants. Mr. Monroe has entered them on his labels and in his lists under the name then commonly applied, *A. Pringlei* (Gray) Britton. The more northerly specimens (from North Bay) remind one of *A. polyphyllus* in general appearance.

In nos. 3331 to 3335, a series is listed as *A. commutatus* (T. & G.) Gray, all collected in Town of York, Racine County, Oct. 11, 1903. Later he doubted this determination himself.[9] My examination of them leads me to confirm his later suspicions and regard them as lusty extremes of *A. ericoides* L. (*A. multiflorus* Ait.),[10] the number of rays (about 20) and all other elements concurring. By this evidence, *A. commutatus* should be excluded from any Wisconsin list.

On one of my visits to him I gave Mr. Monroe some typical specimens of *A. longifolius* which I had collected in central Wisconsin,[11] which pleased him greatly as he had vainly sought this species, the typical plant being of rare occurrence. They are: Wautoma, Waushara County, Aug. 9, 1913, *Benke* nos. 3847 to 3849. In these the smooth outer bracts are almost entirely green, subequal with the inner and the purple rays have a shade of roseate admixture. Nearly all plants of this species seen in herbaria deviate much from the type in leaf-form, in the bracts usually in a well defined series rather than subequal and

[8] Blake, Rhodora **32**: 140 (1930).
[9] Monroe, Bull. Wis. Nat. Hist. Soc. **11**: 99–100 (1913).
[10] Blake, Rhodora **32**: 138 (1930).
[11] Monroe, Bull. Wis. Nat. Hist. Soc. **11**: 102 (1913).

in having white rays; in many cases they agree better with related species.

A. prenanthoides is to be regarded as local in Wisconsin, ranging scarcely beyond the confines of Milwaukee County. Yet in this limited state-range Mr. Monroe has shown a striking new color form:

Aster prenanthoides Muhl., f. **milwaukeensis** f. nov., ligulae albae; forma rara et ut videtur localis.—WISCONSIN: Lake Woods, Milwaukee County, Sept. 10, 1904, *Monroe* 3908 (TYPE, Milwaukee Public Museum).

Rays pure white, the form rare and apparently local.[12]

In his collection is also found a pure white-rayed sample of *A. puniceus* L., f. *albiflorus* Farwell, Elkhart Lake, Sheboygan County, Sept. 21, 1902, no. 3936—his field-notes state: "Rays glistening white."

A. umbellatus Mill., var. *pubens* Gray is rare in Wisconsin, though the species is quite common. The well defined specimens are: Nekoosa, Wood County, Sept. 14, 1912, *Benke* 4016; Saltenberger Lake, Vilas County, Aug. 19, 1915, *Milwaukee Science Club*, mus. no. 32318; Kinnickinic, St. Croix County, Sept. 8, 1923, *A. M. Fuller* mus. no. 68718. Mr. Fuller's specimen has much wider leaves than the other two, it should be noted, leading to the var. *latifolius* Gray, of which it might become a forma on further study.

A. linariifolius is rare in the state, Mr. Monroe having collected but a single specimen. It is: Kilbourn, Adams County, Sept. 3, 1905, no. 4121. Other collectors, too, found it but rarely, as Busseyville, Jefferson County, 1850–1860, *T. Kumlien (Kumlein?)* mus. no. 425; (locality not given), Jefferson County, Sept. 24, 1892, *John W. Dunlap*, mus. no. 9305; and Baraboo, Sauk County, Sept. 13, 1912, *Chas. Goessl* mus. no. 30416.

Hybridism, which makes determination difficult at times, does not occur as often as some may believe. It is more likely that extreme forms of leaf, inflorescence, pubescence and other taxonomic factors in related species that may almost merge, should be regarded as either varieties or formas, depending on the view-point of the taxonomist, rather than as hybrids. During

[12] Another specimen is Lake Woods, Milwaukee County, Oct. 10, 1903, no. 405 given me by way of exchange (Feb. 13, 1913), now in Field Mus. of Nat. Hist. Chicago.

my experience over much territory and many years I have seen countless plants, for example, of *A. novae-angliae* grow with *A. ericoides*, yet have very seldom met with *A. amethystinus* evidently a hybrid of these two.[13] Mr. Monroe was chary of declaring hybridism; he rather considered the influences of environmental factors in working with difficult specimens.

When a series of diverging specimens in a species is arranged from one extreme to another the gradations become apparent, acting to deter workers from announcing a multiplicity of varieties and forms to which they might well be tempted if intermediate patterns were missing.

Special thanks are owing Curator Albert M. Fuller of the Department of Botany, through whose kindness every facility of the Milwaukee Public Museum was placed at my disposal.

Chicago, Ill.

[13] Benke, Rhodora **32**: 1–2 (1930).